CLAIMS

1 A method for estimating a reverse link maximum data rate,
2 comprising:

determining at a source of data a quality metric of a link over which data
4 is to be transmitted;

modifying said quality metric by a quality metric margin; and

6 determining a maximum rate of data in accordance with said modified quality metric.

2 The method as claimed in claim 1, further comprising:

2 processing said quality metric by a predictor.

3 The method as claimed in claim 2, wherein said processing said
2 quality metric by a predictor comprises:

filtering said quality metric by a linear filter.

4 The method as claimed in claim 2, wherein said processing said
2 quality metric by a predictor comprises:

filtering said quality metric by a non-linear filter.

5 The method as claimed in claim 4, wherein said filtering said
2 quality metric by a non-linear filter comprises:

filtering said quality metric by a peak filter.

6 The method as claimed in claim 1, wherein said determining at a
2 source of data a quality metric of a link over which data is to be transmitted comprises:

4 receiving at a source of data at least one signal; and

determining said quality metric in accordance with the received at least
6 one signal.

7 The method as claimed in claim 1, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data at least one first reference signal; and

determining said quality metric in accordance with the received at least one first reference signal and the at lest one first reference signal.

8. The method as claimed in claim 1, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data a feedback signal; and

determining the quality metric in accordance with the received feedback signal.

9. The method as claimed in claim 1, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data at least one signal;

receiving at a source of data a feedback signal; and

determining said quality metric in accordance with the received at least one signal and the received feedback signal.

10. The method as claimed in claim 1, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data a reference signal;

receiving at a source of data a feedback signal; and

determining the quality metric in accordance with the reference signal, the received reference signal, and the received feedback signal.

11. The method as claimed in claim 1, wherein said modifying the quality metric by a quality metric margin comprises:

modifying the quality metric by a pre-determined quality metric margin.

12. The method as claimed in claim 1, wherein said modifying said quality metric by a quality metric margin comprises:

declaring an outage event when power required for transmission of a second reference signal exceeds power required for transmission of the second reference signal determined form previously modified quality metric;

detecting occurrence of the outage event during a pre-determined interval; and

modifying said quality metric in accordance with said detecting.

13. The method as claimed in claim 12, wherein said modifying said quality metric in accordance with said detecting comprises:

increasing a current quality metric margin by a first amount when a pre-determined number of the outage events occurred during the pre-determined interval; and

modifying said quality metric by said increased quality metric margin.

14. The method as claimed in claim 13, further comprising:

decreasing a current quality metric margin by a second amount when the pre-determined number of the outage events did not occur during the pre-determined interval; and

modifying said quality metric by said decreased quality metric margin.

15. The method as claimed in claim 1, wherein said modifying said quality metric by a quality metric margin comprises:

declaring an outage event when power required for transmission of data at the estimated rate of data exceeds maximum allowable transmission power;

detecting occurrence of the outage event during a pre-determined interval; and

modifying said quality metric in accordance with said detecting.

16. The method as claimed in claim 15, wherein said modifying said quality metric in accordance with said detecting comprises:

increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval; and

modifying said quality metric by said increased quality metric margin.

17. The method as claimed in claim 16, further comprising:

decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; and

modifying said quality metric by said decreased quality metric margin.

18. The method as claimed in claim 16, wherein said increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval comprises:

determining whether the estimated rate of data has changed to a maximum allowable rate of data;

setting a quality metric lower limit to the current value of the quality metric; and

increasing the quality metric by a first value when a pre-determined number of outages occurred during the pre-determined interval.

19. The method as claimed in claim 18, further comprising:

decreasing the power margin by a second value if said resulting decreased power margin is greater that the lower limit of the power margin; and

setting the power margin equal to the lower limit of the power margin otherwise.

20. The method as claimed in claim 16, wherein said decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; comprises:

determining whether the estimated rate of data has changed to a minimum allowable rate of data;

setting a quality metric upper limit to the current value of the quality metric; and

decreasing the quality metric by a second value when a pre-determined number of outages occurred during the pre-determined interval.

21. The method as claimed in claim 20, further comprising:

increasing the power margin by a first value if said resulting increased power margin is less that the lower limit of the power margin; and

setting the power margin equal to the lower limit of the power margin otherwise.

22. The method as claimed in claim 16, wherein said increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval comprises:

determining whether the estimated rate of data is equal to a maximum allowable rate of data; and

increasing the quality metric by a first value when a pre-determined number of outages occurred during the pre-determined interval.

23. The method as claimed in claim 22, further comprising:

unchanging the power margin when a pre-determined number of outages did not occur during the pre-determined interval.

24. The method as claimed in claim 16, wherein said decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; comprises:

determining whether the estimated rate of data is equal to a minimum allowable rate of data; and

decreasing the quality metric by a second value when a pre-determined number of outages did not occur during the pre-determined interval.

25. The method as claimed in claim 20, further comprising:

leaving the power margin unchanged when a pre-determined number of outages occurred during the pre-determined interval.

26. The method as claimed in claim 1, wherein said determining a maximum rate of data in accordance with the modified quality metric comprises:

determining a transmission power in accordance with the modified quality metric; and

selecting a data rate whose said determined transmission power does not exceed maximum allowable transmission power.

27. A method for detecting an outage, comprising:

determining at a source of data a quality metric of a link over which data is to be transmitted;

modifying said quality metric by a quality metric margin; and

declaring an outage event when power required for transmission of a reference signal exceeds power required for transmission of the reference signal determined form the modified quality metric.

28. A method for detecting an outage, comprising:

determining at a source of data a quality metric of a link over which data is to be transmitted;

modifying said quality metric by a quality metric margin;

determining a maximum rate of data in accordance with said modified quality metric.

declaring an outage event when power required for transmission of data at the maximum rate of data exceeds maximum allowable transmission power.

29. A method for estimating power required for transmission of a data, comprising:

determining at a source of data a quality metric of a link over which data is to be transmitted;

modifying said quality metric by a quality metric margin; and

determining power required for transmission of a data in accordance with said modified quality metric and a rate of the data.

30. The method as claimed in claim 29, further comprising:

processing said quality metric by a predictor.

31. The method as claimed in claim 30, wherein said processing said quality metric by a predictor comprises:

filtering said quality metric by a linear filter.

32. The method as claimed in claim 30, wherein said processing said quality metric by a predictor comprises:

filtering said quality metric by a non-linear filter.

33. The method as claimed in claim 32, wherein said filtering said quality metric by a non-linear filter comprises:

filtering said quality metric by a peak filter.

34. The method as claimed in claim 29, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data at least one signal; and

determining said quality metric in accordance with the received at least one signal.

35. The method as claimed in claim 29, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data at least one first reference signal; and

determining said quality metric in accordance with the received at least one first reference signal and the at lest one first reference signal.

36. The method as claimed in claim 29, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data a feedback signal; and

determining the quality metric in accordance with the received feedback signal.

37. The method as claimed in claim 29, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data at least one signal;

receiving at a source of data a feedback signal; and

determining said quality metric in accordance with the received at least one signal and the received feedback signal.

38. The method as claimed in claim 29, wherein said determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

receiving at a source of data a first reference signal;

receiving at a source of data a feedback signal; and

determining the quality metric in accordance with the first reference signal, the received first reference signal, and the received feedback signal.

39. The method as claimed in claim 29, wherein said modifying the quality metric by a quality metric margin comprises:

modifying the quality metric by a pre-determined quality metric margin.

40. The method as claimed in claim 29, wherein said modifying said quality metric by a quality metric margin comprises:

declaring an outage event when power required for transmission of a second reference signal exceeds power required for transmission of the second reference signal determined form previously modified quality metric;

detecting occurrence of the outage event during a pre-determined interval; and

modifying said quality metric in accordance with said detecting.

41. The method as claimed in claim 40, wherein said modifying said quality metric in accordance with said detecting comprises:

increasing a current quality metric margin by a first amount when a pre-determined number of the outage events occurred during the pre-determined interval; and

modifying said quality metric by said increased quality metric margin.

42. The method as claimed in claim 41, further comprising:

decreasing a current quality metric margin by a second amount when the pre-determined number of the outage events did not occur during the pre-determined interval; and

modifying said quality metric by said decreased quality metric margin.

43. The method as claimed in claim 29, wherein said modifying said quality metric by a quality metric margin comprises:

declaring an outage event when power required for transmission of data at the estimated rate of data exceeds maximum allowable transmission power;

detecting occurrence of the outage event during a pre-determined interval; and

modifying said quality metric in accordance with said detecting.

44. The method as claimed in claim 43, wherein said modifying said quality metric in accordance with said detecting comprises:

increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval; and

modifying said quality metric by said increased quality metric margin.

45. The method as claimed in claim 44, further comprising:

decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; and

modifying said quality metric by said decreased quality metric margin.

46. An apparatus for estimating a reverse link maximum data rate, comprising:

means for determining at a source of data a quality metric of a link over which data is to be transmitted;

means for modifying said quality metric by a quality metric margin; and

means for determining a maximum rate of data in accordance with said modified quality metric.

47. The apparatus as claimed in claim 46, further comprising:

means for processing said quality metric by a predictor.

48. The apparatus as claimed in claim 47, wherein said means for processing said quality metric by a predictor comprises:

means for filtering said quality metric by a linear filter.

49. The apparatus as claimed in claim 47, wherein said means for processing said quality metric by a predictor comprises:

means for filtering said quality metric by a non-linear filter.

50. The apparatus as claimed in claim 49, wherein said means for filtering said quality metric by a non-linear filter comprises:

means for filtering said quality metric by a peak filter.

51. The apparatus as claimed in claim 46, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data at least one signal; and

means for determining said quality metric in accordance with the received at least one signal.

52. The apparatus as claimed in claim 46, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data at least one first reference signal; and

means for determining said quality metric in accordance with the received at least one first reference signal and the at lest one first reference signal.

53. The apparatus as claimed in claim 46, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data a feedback signal; and

means for determining the quality metric in accordance with the received feedback signal.

54. The apparatus as claimed in claim 46, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data at least one signal;

means for receiving at a source of data a feedback signal; and

means for determining said quality metric in accordance with the received at least one signal and the received feedback signal.

55. The apparatus as claimed in claim 46, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data a first reference signal;

means for receiving at a source of data a feedback signal; and

means for determining the quality metric in accordance with the first reference signal, the received first reference signal, and the received feedback signal.

56. The apparatus as claimed in claim 46, wherein said means for modifying the quality metric by a quality metric margin comprises:

means for modifying the quality metric by a pre-determined quality metric margin.

57. The apparatus as claimed in claim 46, wherein said means for modifying said quality metric by a quality metric margin comprises:

means for declaring an outage event when power required for transmission of a second reference signal exceeds power required for transmission of the second reference signal determined form previously modified quality metric;

means for detecting occurrence of the outage event during a pre-determined interval; and

means for modifying said quality metric in accordance with said detecting.

58. The apparatus as claimed in claim 57, wherein said means for modifying said quality metric in accordance with said detecting comprises:

means for increasing a current quality metric margin by a first amount when a pre-determined number of the outage events occurred during the pre-determined interval; and

means for modifying said quality metric by said increased quality metric margin.

59. The apparatus as claimed in claim 58, further comprising:

means for decreasing a current quality metric margin by a second amount when the pre-determined number of the outage events did not occur during the pre-determined interval; and

means for modifying said quality metric by said decreased quality metric margin.

60. The apparatus as claimed in claim 46, wherein said means for modifying said quality metric by a quality metric margin comprises:

means for declaring an outage event when power required for transmission of data at the estimated rate of data exceeds maximum allowable transmission power;

means for detecting occurrence of the outage event during a pre-determined interval; and

means for modifying said quality metric in accordance with said detecting.

61. The apparatus as claimed in claim 60, wherein said means for modifying said quality metric in accordance with said detecting comprises:

means for increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval; and

means for modifying said quality metric by said increased quality metric margin.

62. The apparatus as claimed in claim 61, further comprising:

means for decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; and

means for modifying said quality metric by said decreased quality metric margin.

63. The apparatus as claimed in claim 61, wherein said means for increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval comprises:

means for determining whether the estimated rate of data has changed to a maximum allowable rate of data;

means for setting a quality metric lower limit to the current value of the quality metric; and

means for increasing the quality metric by a first value when a pre-determined number of outages occurred during the pre-determined interval.

64. The apparatus as claimed in claim 63, further comprising:

means for decreasing the power margin by a second value if said resulting decreased power margin is greater that the lower limit of the power margin; and

means for setting the power margin equal to the lower limit of the power margin otherwise.

65. The apparatus as claimed in claim 62, wherein said means for decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; comprises:

means for determining whether the estimated rate of data has changed to a minimum allowable rate of data;

means for setting a quality metric upper limit to the current value of the quality metric; and

means for decreasing the quality metric by a second value when a pre-determined number of outages occurred during the pre-determined interval.

66. The apparatus as claimed in claim 65, further comprising:

means for increasing the power margin by a first value if said resulting increased power margin is less that the lower limit of the power margin; and

means for setting the power margin equal to the lower limit of the power margin otherwise.

67. The apparatus as claimed in claim 61, wherein said means for increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval comprises:

means for determining whether the estimated rate of data is equal to a maximum allowable rate of data; and

means for increasing the quality metric by a first value when a pre-determined number of outages occurred during the pre-determined interval.

68. The apparatus as claimed in claim 67, further comprising:

means for leaving the power margin unchanged when a pre-determined number of outages did not occur during the pre-determined interval.

69. The apparatus as claimed in claim 61, wherein said means for decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; comprises:

means for determining whether the estimated rate of data is equal to a minimum allowable rate of data; and

means for decreasing the quality metric by a second value when a pre-determined number of outages did not occur during the pre-determined interval.

70. The apparatus as claimed in claim 69, further comprising:

means for leaving the power margin unchanged when a pre-determined number of outages occurred during the pre-determined interval.

71. The apparatus as claimed in claim 46, wherein said means for determining a maximum rate of data in accordance with the modified quality metric comprises:

means for determining a transmission power in accordance with the modified quality metric; and

means for selecting a data rate whose said determined transmission power does not exceed maximum allowable transmission power.

72. An apparatus for detecting an outage, comprising:

means for determining at a source of data a quality metric of a link over which data is to be transmitted;

means for modifying said quality metric by a quality metric margin; and

means for declaring an outage event when power required for transmission of a reference signal exceeds power required for transmission of the reference signal determined form the modified quality metric.

73. An apparatus for detecting an outage, comprising:

means for determining at a source of data a quality metric of a link over which data is to be transmitted;

means for modifying said quality metric by a quality metric margin;

means for determining a maximum rate of data in accordance with said modified quality metric.

means for declaring an outage event when power required for transmission of data at the maximum rate of data exceeds maximum allowable transmission power.

74. An apparatus for estimating power required for transmission of a data, comprising:

means for determining at a source of data a quality metric of a link over which data is to be transmitted;

means for modifying said quality metric by a quality metric margin; and

means for determining power required for transmission of a data in accordance with said modified quality metric and a rate of the data.

75. The apparatus as claimed in claim 74, further comprising:

means for processing said quality metric by a predictor.

76. The apparatus as claimed in claim 75, wherein said means for processing said quality metric by a predictor comprises:

means for filtering said quality metric by a linear filter.

77. The apparatus as claimed in claim 75, wherein said means for processing said quality metric by a predictor comprises:

means for filtering said quality metric by a non-linear filter.

78. The apparatus as claimed in claim 77, wherein said means for filtering said quality metric by a non-linear filter comprises:

means for filtering said quality metric by a peak filter.

79. The apparatus as claimed in claim 74, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data at least one signal; and

means for determining said quality metric in accordance with the received at least one signal.

80. The apparatus as claimed in claim 74, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data at least one first reference signal; and

means for determining said quality metric in accordance with the received at least one first reference signal and the at lest one first reference signal.

81. The apparatus as claimed in claim 74, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data a feedback signal; and

means for determining the quality metric in accordance with the received feedback signal.

82. The apparatus as claimed in claim 74, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data at least one signal;

means for receiving at a source of data a feedback signal; and

means for determining said quality metric in accordance with the received at least one signal and the received feedback signal.

83. The apparatus as claimed in claim 74, wherein said means for determining at a source of data a quality metric of a link over which data is to be transmitted comprises:

means for receiving at a source of data a first reference signal;

means for receiving at a source of data a feedback signal; and

means for determining the quality metric in accordance with the first reference signal, the received first reference signal, and the received feedback signal.

84. The apparatus as claimed in claim 74, wherein said means for modifying the quality metric by a quality metric margin comprises:

means for modifying the quality metric by a pre-determined quality metric margin.

85. The apparatus as claimed in claim 74, wherein said means for modifying said quality metric by a quality metric margin comprises:

means for declaring an outage event when power required for transmission of a second reference signal exceeds power required for

transmission of the second reference signal determined form previously modified quality metric;

means for detecting occurrence of the outage event during a pre-determined interval; and

means for modifying said quality metric in accordance with said detecting.

86. The apparatus as claimed in claim 85, wherein said means for modifying said quality metric in accordance with said detecting comprises:

means for increasing a current quality metric margin by a first amount when a pre-determined number of the outage events occurred during the pre-determined interval; and

means for modifying said quality metric by said increased quality metric margin.

87. The apparatus as claimed in claim 86, further comprising:

means for decreasing a current quality metric margin by a second amount when the pre-determined number of the outage events did not occur during the pre-determined interval; and

means for modifying said quality metric by said decreased quality metric margin.

88. The apparatus as claimed in claim 74, wherein said means for modifying said quality metric by a quality metric margin comprises:

means for declaring an outage event when power required for transmission of data at the estimated rate of data exceeds maximum allowable transmission power;

means for detecting occurrence of the outage event during a pre-determined interval; and

means for modifying said quality metric in accordance with said detecting.

89. The apparatus as claimed in claim 88, wherein said means for modifying said quality metric in accordance with said detecting comprises:

means for increasing a current quality metric margin by a first amount when a pre-determined number of outages occurred during the pre-determined interval; and

means for modifying said quality metric by said increased quality metric margin.

90. The apparatus as claimed in claim 89, further comprising:

means for decreasing a current quality metric margin by a second amount when the pre-determined number of outages did not occur during the pre-determined interval; and

means for modifying said quality metric by said decreased quality metric margin.

91. An apparatus for estimating a reverse link maximum data rate, comprising:

an estimator configured to determine at a source of data a quality metric of a link over which data is to be transmitted;

a combiner communicatively coupled to said estimator configured to modify the quality metric by a quality metric margin; and

a processing block communicatively coupled to said combiner configured to determine a maximum rate of data in accordance with the modified quality metric.

92. The apparatus as claimed in claim 91, wherein said estimator comprises a predictor.

93. The apparatus as claimed in claim 92, wherein said predictor comprises a linear filter.

94. The apparatus as claimed in claim 92, wherein said predictor comprises a non-linear filter.

95. The apparatus as claimed in claim 94, wherein said non-linear filter comprises a peak filter.

96. The apparatus as claimed in claim 91, wherein said estimator comprises an open loop estimator.

97. The apparatus as claimed in claim 91, wherein said estimator comprises a closed loop estimator.

98. The apparatus as claimed in claim 91, wherein said estimator comprises:

an open loop estimator;

a closed loop estimator; and

a combiner communicatively coupled to said open loop estimator and a open loop estimator.

99. The apparatus as claimed in claim 91, further comprising an outage event detector communicatively coupled to said combiner.

100. A apparatus for estimating power required for transmission of a data, comprising:

an estimator configured to determine at a source of data a quality metric of a link over which data is to be transmitted;

a combiner communicatively coupled to said estimator configured to modify the quality metric by a quality metric margin; and

a processing block communicatively coupled to said combiner configured to determine power required for transmission of a data in accordance with said modified quality metric and a rate of the data.

101. The apparatus as claimed in claim 100, wherein said estimator comprises a predictor.

102. The apparatus as claimed in claim 101, wherein said predictor comprises a linear filter.

103. The apparatus as claimed in claim 101, wherein said predictor comprises a non-linear filter.

104. The apparatus as claimed in claim 103, wherein said non-linear filter comprises a peak filter.

105. The apparatus as claimed in claim 100, wherein said estimator comprises an open loop estimator.

106. The apparatus as claimed in claim 100, wherein said estimator comprises a closed loop estimator.

107. The apparatus as claimed in claim 100, wherein said estimator comprises:

an open loop estimator;

a closed loop estimator; and

a combiner communicatively coupled to said open loop estimator and a open loop estimator.

108. The apparatus as claimed in claim 100, further comprising an outage event detector communicatively coupled to said combiner.